

WHAT IS CLAIMED IS:

1. An optical scanning device, comprising:
light source means for emitting at least one
light flux having a wavelength equal to or smaller
5 than 500 nm;
deflection means for deflecting at least one of
the light fluxes emitted from the light source means;
and
a scanning optical system for imaging the light
10 flux deflected by the deflection means onto a surface
to be scanned,
wherein the scanning optical system comprises
at least two lenses including a glass lens and a
plastic lens, each of which has an opposite sign of
15 power, and
chromatic aberration of magnification in a main
scanning direction in the optical scanning device is
corrected to be equal to or smaller than 40 μm in the
case where a difference of wavelengths in the light
20 flux emitted from the light source means is set to 5
nm.

2. An optical scanning device according to
claim 1, wherein the scanning optical system
25 comprises a glass lens, a first plastic lenses, and a
second plastic lens, which are disposed in order from
the deflection means, the glass lens having negative

power in the main scanning direction, the first plastic lens having positive power in the main scanning direction and the second plastic lens.

- 5 3. An optical scanning device according to claim 2, wherein the scanning optical system satisfies a relational expression,

$$|\Phi_G/v_G + \Phi_P/v_P| < 0.02 \times \Phi$$

where

10. Φ_G : power of the glass lens in the main scanning direction on an optical axis of the scanning optical system,
 v_G : an Abbe number of the glass lens,
 Φ_P : synthetic power of the first plastic lens and the
15 second plastic lens in the main scanning direction on the optical axis of the scanning optical system,
 v_P : an Abbe number of the first plastic lens and the second plastic lens, and
 Φ : synthetic power of all systems of the scanning
20 optical system in the main scanning direction on the optical axis of the scanning optical system.

4. An optical scanning device according to claim 2, wherein at least one surface of each of the
25 first plastic lens and the second plastic lens in the main scanning direction is aspherical.

5. An optical scanning device according to claim 1, wherein the light source means includes a multi-beam light source that emits at least two light fluxes.

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6. An image forming apparatus, comprising:
the optical scanning device according to any one of claims 1 to 5;

a photosensitive member located on the surface
10 to be scanned;

a developing unit that develops as a toner image an electrostatic latent image formed on the photosensitive member which is scanned with the light flux emitted from the optical scanning device;

15 a transferring unit that transfers the developed toner image onto a material to be transferred; and

a fixing device that fixes the transferred toner image onto the material to be transferred.

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7. An image forming apparatus, comprising:
the optical scanning device according to claim 6; and

a printer controller that converts code data
25 inputted from an external device into an image signal and outputs the image signal to the optical scanning device.

8. A color image forming apparatus, comprising:
a plurality of the optical scanning devices
according to any one of claims 1 to 5; and

a plurality of image bearing members arranged
5 at positions on the surface to be scanned by the
plurality of optical scanning devices and form images
of different colors.

9. A color image forming apparatus, comprising:
10 the optical scanning devices according to claim
8; and

a printer controller that converts code data
inputted from an external device into an image signal
and outputs the image signal to the optical scanning
15 devices.

10. An optical scanning device, comprising:
light source means for emitting at least one
light flux;

20 deflection means for deflecting at least one of
the light fluxes emitted from the light source means;
and

a scanning optical system for imaging the light
flux deflected by the deflection means onto a surface
25 to be scanned,

wherein the scanning optical system comprises a
glass lens and two plastic lenses, and chromatic

aberration of magnification in a main scanning direction is corrected to be equal to or smaller than 40 μm in the case where a difference of wavelengths is set to 5 nm.

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11. An optical scanning device according to claim 10, wherein the scanning optical system comprises a glass lens, a first plastic lenses, and a second plastic lens, which are disposed in order from the deflection means, the glass lens having negative power in the main scanning direction, the first plastic lens having positive power in the main scanning direction and the second plastic lens.

15 12. An optical scanning device according to claim 11, wherein the scanning optical system satisfies a relational expression,

$$|\Phi_G/v_G + \Phi_P/v_P| < 0.02 \times \Phi$$

where

20 Φ_G : power of the glass lens in the main scanning direction on an optical axis of the scanning optical system,

v_G : an Abbe number of the glass lens,

Φ_P : synthetic power of the first plastic lens and the second plastic lens in the main scanning direction on the optical axis of the scanning optical system,

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v_P : an Abbe number of the first plastic lens and the

second plastic lens, and

Φ : synthetic power of all systems of the scanning optical system in the main scanning direction on the optical axis of the scanning optical system.

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13. An optical scanning device according to claim 10, wherein at least one surface of each of the first plastic lens and the second plastic lens in the main scanning direction is aspherical.

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14. An optical scanning device according to claim 10, wherein the light source means includes a multi-beam light source that emits at least two light fluxes.

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15. An image forming apparatus, comprising:
the optical scanning device according to any one of claims 10 to 14;

a photosensitive member located on the surface
20 to be scanned;

a developing unit that develops as a toner image an electrostatic latent image formed on the photosensitive member which is scanned with the light flux emitted from the optical scanning device;

25 a transferring unit that transfers the developed toner image onto a material to be transferred; and

a fixing device that fixes the transferred toner image onto the material to be transferred.

16. An image forming apparatus, comprising:
5 the optical scanning device according to claim 15; and

a printer controller that converts code data inputted from an external device into an image signal and outputs the image signal to the optical scanning
10 device.

17. A color image forming apparatus, comprising:

a plurality of the optical scanning devices
15 according to any one of claims 10 to 14; and

a plurality of image bearing members arranged at positions on the surface to be scanned by the plurality of optical scanning devices and form images of different colors.

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18. A color image forming apparatus, comprising:

the optical scanning devices according to claim 17; and

25 a printer controller that converts code data inputted from an external device into an image signal and outputs the image signal to the optical scanning devices.